because of their woody stems and unusual height—the specimens exceeding three meters.

Whether the plants are native, and possess an intermittent range to the Gulf, or have been introduced, is still a conjectural matter.—

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NOTES ON THE FLORA OF TENNESSEE: THE GENUS TRILLIUM

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The genus *Trillium*, including as it does some of the most attractive spring flowers, has always had considerable attention from botanists. More than a hundred years ago the greater number of eastern North American species had been introduced into Europe, where they were cherished as horticultural rarities. Illustrations, not only of the various species, but also of color-forms, appeared in the botanical and horticultural publications of the late 18th and early 19th centuries. As for the present day interest in *Trillium*, there have been within the past forty years four revisions of the genus or of sections of it;[1] two revisions of the Trilliums of particular regions;[2] a series of studies of the California Trilliums, involving the life-history of the plants, their frequent sterility, and production of monstrosities;[3] and a vast number of short notices, mostly concerned with teratological forms. In spite of all this publication, several points seem to have been overlooked concerning the taxonomy and nomenclature of this interesting genus, and there are certain problems which as yet await solution.

Though the genus *Trillium* is a small one, it is unusually complex. Many species exhibit a high degree of variability in size, in color, and in form. All the species with atropurpureous petals have light-colored allies, which may be recognized as forms or varieties, or which in some

[1] Small, J. K., *The Sessile-flowered Trillia of the Southern States*, Bull. Torr. Bot. Cl. xxiv. 169–175 (1897).

Rendle, A. B., *Notes on Trillium*, Journal of Botany, xxxix. 321–335 (1901).

Gleason, H. A., *The Pedunculate Species of Trillium*, Bull. Torr. Bot. Cl. xxxiii. 387–396 (1906).

Gates, R. R., *A Systematic Study of the North American Genus Trillium*, Ann. Missouri Bot. Gard. iv. 43–92 (1917).

[2] Peattie, Donald C., *Trillium in North and South Carolina*, Jour. Elish. Mitch. Soc. xlii. 193–206 (1927).

Friesner, Ray C., *The Genus Trillium in Indiana*, Butler Univ. Bot. Studies, Papers nos. 2 and 3 (1929).

[3] Goodspeed and Brandt, *Notes on the Californian Species of Trillium*, Univ. Calif. Pub. Bot. vol. vii, nos. 1–4 (1916–1917).

cases are given specific rank. In the group of large, broad-leaved, sessile-flowered Trilliums, the specific lines are particularly hard to draw. *Trillium Hugeri* and the plant described by Harbison as *T. luteum* are, respectively, the deep-red and greenish-yellow, sessile-flowered Trilliums of the Tennessee and North Carolina Appalachians. In the Ozarks and vicinity are *T. viride*, a green-petalled species, and a purplish-flowered variety which has been given specific rank as *T. viridescens*. These two are described as having narrower petals than does *T. Hugeri*, and as being slightly pubescent near the tops of the stems and on the veins of the leaves, but some individuals are hard to separate from the Appalachian plants. In California is a series of sessile-flowered Trilliums which is almost identical with these of the Ozarks and of the Appalachians, and which includes atropurpureous-, greenish-yellow-, and white-flowered forms, also narrow-petalled and broad-petalled plants. McBride[1] suggests the possibility that these are identical with the Appalachian species. In view of the fact that the floras of the two regions are unrelated, this seems unlikely, yet more study will be needed before the relationships of these plants is satisfactorily explained. It is small wonder that Elliott, in 1817[2] wrote of the genus *Trillium*, "Under great simplicity and conformity of habit, . . . it contains and conceals many species."

That field experience is desirable is an axiom of taxonomic procedure. Other lines of attack which might lead to a better understanding of the genus *Trillium* are:—

1. A study of growth in various parts of the plant during the flowering period, such as was made by Harbison[3] on *T. ludovicianum*.

2. A study of rootstock- and fruit-characters. The present investigation reveals that one section of sessile-flowered Trilliums may be set apart on rootstock-characters alone. Fruits are rarely collected, and apparently little attention has been paid to them.

3. Studies in hybridization. Gates[4] suggests hybrid origin of many strains within certain species, and Goodspeed[5] suggests that teratological variations may result from the heterozygous condition. Experimental proof of these statements should be attempted.

[1] McBride, J. F., Contr. Gray Herb. n. ser. lvi 19 (1918).

[2] Elliott, Stephen, Sketch of the Botany of South Carolina and Georgia, i. 430 (1817).

[3] Harbison, T. G., Biltmore Bot. Studies, i. 24 (1901).

[4] Gates, R. R., Ann. Mo. Bot. Gard. iv. *T. erectum* var. *album*, p. 54, and *T. luteum*, p. 46.

[5] Goodspeed, Univ. Calif. Pub. Bot. vii. 85 (1917).

Tennessee has so many species of *Trillium* within its borders that a study of them involves nearly all the species of the eastern United States. The following key includes all known species within this region excepting the southern *T. decumbens*, *T. ludovicianum*, and *T. pusillum*, and the middle-western *T. nivale*.

a. Flowers sessile....*b.*
  b. Rootstocks slender, horizontal; petals distinctly clawed; anthers arching over the stigmas....*c.*
    c. Leaves petioled; sepals reflexed.....6. *T. recurvatum.*
    c. Leaves sessile; sepals spreading.....7. *T. lanceolatum.*
  b. Rootstocks short and stout; petals variously shaped, but, if narrowed below, not into a distinct claw; anthers straight....*d.*
    d. Stamens about half the length of the petals....*e.*
      e. Petals about half the width of the sepals; stamens 1.5–2 mm. broad.....9. *T. stamineum.*
      e. Petals as wide as or wider than the sepals; stamens about 1 mm. wide.....1. *T. sessile.*
    d. Stamens not more than one third the length of the petals....*f.*
      f. Petals broadly spatulate, at least one of them mucronate. 8. *T. discolor.*
      f. Petals linear to broadly oblanceolate, usually acute or acuminate, rarely obtuse, but not spatulate....*g.*
        g. Leaves lanceolate to ovate, acute.....2. *T. maculatum.*
        g. Leaves broadly ovate to orbicular, acuminate....*h.*
          h. Entirely glabrous; petals narrowly to broadly oblanceolate....*i.*
            i. Petals atropurpureous.....3. *T. Hugeri.*
            i. Petals yellow.....4. *T. luteum.*
          h. Upper part of stem and veins on lower surfaces of leaves pubescent; petals linear.....5. *T. viride.*
a. Flowers peduncled....*j.*
  j. Ovary winged or angled; petals of one color....*k.*
    k. Petals lanceolate to ovate, spreading from the base; ovary usually dark-colored....*l.*
      l. Filaments 2–3.5 mm. long....*m.*
        m. Petals atropurpureous.....10. *T. erectum.*
        m. Petals white.....10a. *T. erectum* var. *album.*
      l. Filaments 5–10 mm. long.....11. *T. Vaseyi.*
    k. Petals lanceolate to oblong or obovate, their bases ascending, the upper part spreading; ovary light-colored....*n.*
      n. Filaments and anthers slender; flowers usually raised above the leaves.....12. *T. grandiflorum.*
      n. Filaments and anthers stout; flowers on cernuous or declined peduncles, below the leaves....*o.*
        o. Style present; stamens usually long and anthers curved; corolla revolute.....13. *T. Catesbaei.*
        o. Style absent; stamens short and straight; corolla spreading, not revolute....*p.*
          p. Peduncle about as long as the flower, curved downward.....14. *T. cernuum.*
          p. Peduncle almost as long as the leaves, straight, but declined beneath the leaves.....15. *T. Gleasoni.*
  j. Ovary not winged or angled; petals white, with a purple spot near the base.....16. *T. undulatum.*

1. Trillium sessile L. Sp. Pl. i. 340 (1753). *T. longiflorum* Raf.[1] Med. Fl. ii. 97 (1830). *T. rotundifolium* Raf. l. c. *T. tinctorium* Raf. l. c. 98. *T. isanthum* Raf. l. c. *T. membranaceum* Raf. l. c.—*T. sessile* grows in Pennsylvania, Virginia, Ohio, central Kentucky, Tennessee and Arkansas. In Tennessee it has been found only in the central part of the State. Kingston Springs, *Svenson*, no. 34. Nashville, *Wilkinson;* Lee's place (Nashville), Apr., 1878, *Gattinger*.

While Linnaeus included at least two species in his *Trillium sessile*, Small[2] and Rendle[3] have shown that the name is more properly applied to this small plant of the middle States. Yellow- or green-flowered plants often are present in colonies of the ordinary red-flowered plants.[4]

2. T. maculatum Raf. Med. Flor. ii. 103 (1830). *Solanum triphyllon flore hexapetalo* Catesby, Nat. Hist. Carol. t. 50. *T. sessile* L. in part. *T. sessile* Elliott, Sketch i. 426 (1817), as to plant described. *T. discolor* Chapman, Fl. Southern U. S. 478 (1860) and later editions, not Wray. *T. Underwoodii* Small, Bull. Torr. Bot. Cl. xxiv. 172 (1897) and in Fl. Se. U. S. 277 (1903). *T. lanceolatum* Boykin, var. *rectistamineum* Gates, Ann. Mo. Bot. Gard. iv. 48 (1917). *T. rectistamineum* (Gates) St. John, Rhodora xxii. 78 (1920). Perhaps *T. sessile*, var. *praecox* Nuttall, Trans. Am. Phil. Soc. v. 154 (1837).—Rhizome usually corm-like, erect or horizontal; stem 1–3.5 dm. high, smooth; leaves 6–11 cm. long, lance-ovate, with rounded base and acute tip, strongly mottled, mottling tending to form longitudinal stripes; sepals 2.5–5 cm. long, erect, lanceolate, acute; petals 3.5–6 cm. long, oblanceolate, acute; anthers about 13 mm. long, connective projecting; stigmas recurved.

Though this plant has been known as long, perhaps, as any species of *Trillium*, and was one of the first to be illustrated, it has been the subject of a great deal of misunderstanding. Even after Small clearly demonstrated its validity as a species and gave it a name,

[1] Many of the numerous species of *Trillium* proposed by Rafinesque are referable to the trivial variations which are so abundant in this genus. A number of them can be identified with well marked species, and where this is the case they are cited in synonymy in this paper.

[2] Small, J. K., *Sessile-flowered Trillia of the Southern States*, Bull. Torr. Bot. Cl. xxiv. 169 (1897).

[3] Rendle, A. B., *Notes on Trillium*, Jour. Bot. xxxix. 321 (1901).

[4] Peattie, Jour. Elish. Mitch. Soc. xlii. 197 (1927), considers *T. sessile*, var. *luteum* Muhl. to be one of these rather than the larger *T. luteum* (Muhl.) Harbison of North Carolina and eastern Tennessee. Harbison, however, makes it clear, from his study of plants in the Muhlenberg herbarium, that the name is properly applied to the more southern plant, and he published it properly in Biltmore Botanical Studies i. 22 (1901). Beyer, in Torreya xxvii. 83 (1927), publishes *T. sessile*, var. *viridiflorum*, a green-flowered form of *T. sessile*. That such forms have long been recognized is shown by the fact that in every edition of Gray's Manual except the first, the petals of *T. sessile* are described as "purple varying to greenish."

Gates described it as a variety of *T. lanceolatum*, which it only superficially resembles, and St. John raised it to specific rank under Gates' varietal name.

Among the numerous species of *Trillium* described by Rafinesque, this one is unmistakable, not so much by the description, as by the citation to Elliott. Rafinesque's description is as follows:

> 34. *Tr. maculatum* Raf. (*Tr. sessile*, Elliot.) Stem spotted, leaves sessile ovate acute, trinerve, spotted: calyx erect oblong,'petals spatulate, twice as long, dark purple. In Carolina, &c.

Elliott's Latin diagnosis is a direct quotation from Pursh: "T. flore sessili, erecto; petalis lanceolatis, erectis, calyce duplo longioribus; foliis sessilibus, lato-ovalibus, acutis. Pursh, 1. p. 244." This might apply to any one of several sessile-flowered Trilliums, but Elliott's careful supplementary description leaves no doubt as to the plant involved:

> *Root* thick, solid, with rings on the circumference, which, perhaps, indicate each years growth. *Stem* herbaceous, 6–12 inches high, glabrous, spotted, with small decaying sheaths at base. *Leaves* 3 at the summit of the stem, ovate, or oval, acute, 5 nerved, the 2 exterior obsolete, curiously spotted. *Flowers* sessile on the summit of the stem. *Calyx* 3 leaved, leaves oblong, ovate, erect, glabrous, green. *Petals* spathulate, lanceolate, erect or connivent, twice as long as the calyx, dark purple. *Filaments* flat, rigid, not half as long as the calyx, dark purple. *Anthers* linear, attached to the sides of the filaments, pale purple. *Germ* superior, ovate, 3 angled. *Styles* short, expanding. *Stigma* obtuse. *Berry* glabrous, depressed, dark purple.
>
> Grows in rich, high lands. The only species found near the sea coast. Flowers March–April.

It is clear that by "filaments" Elliott meant both filaments and connective, and that the stamens were only one fourth as long as the petals. This is the diagnostic character which sets off *T. maculatum* and *T. Hugeri* from *T. sessile*. That Elliott's plant was not *T. Hugeri* is indicated by the fact that the leaves were "ovate, or oval, acute, . . . curiously spotted." *T. Hugeri* has broadly ovate, acuminate leaves which are not strikingly spotted. In addition to this Elliott gives the correct geographic data,—"the only species found near the sea coast."

There are no authentic records of *Trillium maculatum* in Tennessee. It is a plant of the coastal plain and piedmont regions from the Carolinas to Alabama and Mississippi.

3. Trillium Hugeri Small, Fl. Se. U. S. 277 (1903).—A plant of the Appalachians of the Carolinas and Tennessee, which may be dis-

tinguished from *T. maculatum* by its broader, less mottled leaves, but is less readily separable from *T. viride* of the Ozark region, and perhaps should be included in that species. Knoxville, *Scribner*, no 7553; Lookout Mountain, Apr. 29, 1906, *T. O. Fuller;* wet ravine near Emory River, Wartburg, May 22, 1929, *Jennison & Anderson* (this specimen had petals pale toward the tips like *T. viride*, but is glabrous); Nashville, *Wilkinson*, and in Apr., 1878, *Gattinger*.

4. T. LUTEUM (Muhl.) Harbison, Biltmore Bot. Studies. i. 22 (1901). According to Harbison, *T. sessile*, var. *luteum* Muhl. Cat. p. 38 (1813). *T. Underwoodii*, var. *luteum* McBride, Contr. Gray Herb. lvi. 19 (1918). *T. luteum*, var. *latipetalum* Gates, Ann. Mo. Bot. Gard. iv. 46 (1917). *T. Hugeri*, forma *flava* Peattie, Jour. Elish. Mitch. Soc. xlii. 199 (1927).—Stem 2–6 dm. high from a short, thick rootstock; leaves 6–14 cm. long, broadly ovate to orbicular, acuminate, mottled, smooth, or veins of lower surface scabrous; sepals 3–4 cm. long, lanceolate, blunt; petals 4–6 cm. long, narrowly to broadly oblanceolate, sometimes almost linear, often somewhat twisted toward the tips, greenish-yellow to almost a buttercup-yellow; stamens 1–1.5 cm. long, filaments very short, connectives broad and slightly projecting at the tip; flower delicately fragrant, lemon-scented.

This plant is the most abundant *Trillium* in the valley of East Tennessee where it grows in pure stands unmixed with any red-flowered form. It does, however, show considerable range of variability, and the extreme types approach other named "species" so closely that it becomes doubtful whether the distinction really exists or not. *T. luteum* is closest related to *T. Hugeri*, to which it is similar in every respect except in color; every part of the plant shows the yellow pigmentation instead of purple. A specimen with wide petals would fall under Gates' var. *latipetalum*. One with very narrow, greenish petals, if accompanied with scabrous veins on the leaves would pass for *T. viride*, and forms with twisted petals approach *T. decumbens* Harbison, at least in this respect.

McBride described *T. luteum* as a variety of *T. Underwoodii* because he confused that species with *T. Hugeri*. Through the courtesy of Dr. J. K. Small the writer has been able to examine type material of *T. Hugeri* and representative specimens of *T. Underwoodii*. There can be no doubt that *T. luteum* is more properly associated with the former species.

Near Wolf Creek, May 19, 1928, *Jennison;* Sevierville, Apr. 11, 1917, *Ainslie;* Love's Creek, Knox County, Apr. 1925, *Galyon;* Knoxville, rich soil, common, May, 1895, *Ruth;* foot of Clinch Mountain, Corryton, *Marjorie Shipe*, no. 1; Harriman, *Kearney*, no. 107; Grand View, 1897, *R. W. Taylor*. A specimen of *Gattinger's*, from

Nashville, Apr. 1878, which is labelled *T. sessile*, var. *discolor* may belong to this species, though it is very faded, and could equally well be *T. Hugeri* or *T. viride*.

5. T. VIRIDE Beck, Amer. Jour. Sci. ix. 178 (1826). *T. viridescens* Nuttall, Trans. Am. Phil. Soc. v. 155 (1837). *T. sessile*, var. *Nuttallii* Watson, Proc. Am. Acad. Sci. xiv. 273 (1879).

As represented by specimens in the Gray Herbarium, plants from Missouri and Arkansas have stamens which are actually and proportionally longer than those of narrow-petalled specimens of *T. Hugeri* from Tennessee. The original description of *T. viride* states that the stamens are "half the length of the corol," but in specimens the writer has seen they are nearer one third. Most specimens of *Trillium* are mounted in such a way that the upper parts of the stems and the undersides of the leaves can not be seen. *T. viride* is described as being pubescent on these parts, but a study of fresh or unmounted specimens will be necessary in order to ascertain the constancy of this character. Small[1] recognizes *T. viridescens* as a separate species, with solidly purple-red petals.

T. viride grows in Missouri and Arkansas, and according to Small, in North Carolina, Alabama and Mississippi. A specimen of *Gattinger's*, Nashville Apr., 1878, and one of *Scribner's*, Knoxville, May 18, 1889, may belong to this species.

6. T. RECURVATUM Beck, Am. Jour. Sci. xi. 178 (1828). *T. unguiculatum* Raf. Med. Bot. ii. 98 (1830). *T. unguiculatum* Nutt. Trans. Am. Phil. Soc. v. 154 (1837).—1.3–3 dm. high from a slender horizontal rootstock; leaves 6–9 cm. long, narrowed into a petiole which is 0.8–2 cm. long, blade broadly lanceolate to nearly orbicular; sepals 1.5–2.2 cm. long, lanceolate, reflexed so they lie close against the stem; petals 2.2–3.2 cm. long, erect, clawed; blade varying in width but usually lanceolate and acuminate; filaments 3–4 mm. long, anthers 6–10 mm. long, incurved at the tip; stigmas erect with recurved tips.[2]

As in other species of *Trillium* there is great variation in the shape of the petals. In southeastern Iowa a robust form with broad, scarcely clawed petals and nearly sessile leaves is very common. It would pass for a distinct variety or almost as a separate species, if it did not intergrade with typical plants in the same colony. A yellow form, *T. recurvatum*, forma *luteum* has been described by Clute[3] and also by Friesner.[4]

[1] Small, Fl. Se. U. S., 278 (1903).

[2] Robertson, Charles, Bot. Gaz. xxi. 271 (1896), says this arrangement of stigmas and stamens is for self pollination, that these flowers have lost their power to attract insects other than occasional beetles which feed on the pollen.

[3] Clute, Willard N., Am. Botanist xxviii. 79 (1922).

[4] Friesner, Ray C., Butler Univ. Bot. Studies, Paper 3: 29 (1929).

T. recurvatum is a species of the Mississippi valley from Michigan and Wisconsin southward to West Tennessee and Arkansas. Low woods in river bottom, Clarksville, Apr. 23, 1919, *Ainslie;* rich woods, *Bain*, no. 174; Jackson, Apr. 1893, *Bain;* Brighton, Tipton county, *Palmer*, no. 17317.

7. T. LANCEOLATUM Boykin ex Watson, Proc. Am. Acad. xiv 274 as syn. (1879); Small, Bull. Torr. Bot. Cl. xxiv. 174 (1897). *T. recurvatum* var. *lanceolatum* Wats. Proc. Am. Acad. Sci. xiv. 273 (1879). —Differs from *T. recurvatum* in having lanceolate, sessile leaves; sepals spreading, not reflexed; plant taller and more slender. It may be regarded as the representative of *T. recurvatum* in the Gulf States. It is not found in Tennessee.

8. T. DISCOLOR Wray ex Hook. Bot. Mag. lviii, t 3097 (1831) has spatulate yellow petals, of which at least one is apiculate.

9. T. STAMINEUM Harbison, Biltm. Bot. Stud. i. 23 (1901) has a very pubescent stem, and pubescent veins on the lower surfaces of the leaves; petals which are much narrower than the sepals, and very large, broad, purple stamens, which are almost as large as the petals.

Neither of these Trilliums has been reported from Tennessee. According to Small the former is found in the Carolinas and in Georgia, while the latter grows in Georgia, Alabama and Mississippi.

10. T. ERECTUM L. Sp. Pl. i. 340 (1753). *T. rhomboideum* Michx., Fl. Bor.-Am. 215 (1803). *T. acuminatum* Raf. Med Bot. ii. 99 (1830). *T. nutans* Raf. l. c. *T. flavum* Raf. l. c. 100.

The common, ill-scented Trillium of northeastern United States, ranges southward in the Appalachians to Tennessee. It is rare in the southern part of its range where it is replaced by the white-petalled var. *album*. Mt. Pisgah, May 27, 1928, *Hesler;* Shady Valley, May 4, 1928, *Jennison;* Rockwood, *Galyon*, no. 455; rich woods, Harriman, *Kearney*, no. 172.

10 a. T. ERECTUM, var. ALBUM (Michx.) Pursh, Fl. Am. Sept. i. 245 (1814). *T. rhomboideum*, β. *album* Michx. Fl. Bor.-Am 215 (1803).—Differs from *T. erectum* only in the color of the petals, which are white, or creamy in age, and in having no scent. Farther north light-colored plants of *T. erectum* have been reported, some of them true albinos, with all parts of the flower white or green. In the Great Smoky Mountains these plants have dark ovaries, although the petals are white. In certain localities they grow by thousands.—Glade below Indian Grave Flat, Gatlinburg, *Anderson & Jennison*, no. 861; Roaring Fork, Gatlinburg, *Anderson*, no. 813 (one specimen approaches *T. Vaseyi*); Mt. LeConte, Gatlinburg, *Galyon*, nos. 467, 484; Cades Cove Mountain, Blount County, *Anderson*, no. 889; woods, Hiwassee Valley, *Ruth*, no. 457; Knoxville, *Ruth*, no. 456.

11. T. VASEYI Harbison, Biltm. Bot. Stud. i. 24 (1901). This, the largest *Trillium* in America, is like a gigantic *T. erectum*, some stem 6 dm. high; leaves 2 dm. long; petals 8 cm. long, 5 cm. wide, crimson-

purple; filaments much longer than in *T. erectum*, 5–10 mm. long; anthers 9–15 mm. long. *T. Vaseyi*, forma *album* House, Muhlenbergia vi. 73 (1910) is the white-petalled form.—An endemic of the southern Appalachians, not common. Mt. LeConte, Gatlinburg, *Galyon*, no. 470; Gatlinburg, June 8, 1930, *Sharp;* low woods, Oliver Springs, *Anderson & Jennison*, no. 958; without locality, *Gattinger*.

12. T. GRANDIFLORUM (Michx.) Salisb. Parad. Lond. t. i (1806). *T. rhomboideum* γ. *grandiflorum* Michx. Fl. Bor.-Am. i. 216 (1803). The common, large-flowered, white Trillium of the northeastern States, very variable, but easily recognized by the slender filaments and petals ascending at the base. The leaves are usually contracted into a very short petiole; the extreme form has been described as a distinct variety, var. *lirioides* (Raf.) Victorin.[1]

T. grandiflorum is restricted to the mountains in Tennessee. Lemon's Gap, Cocke County, *Kearney*, no. 338; Thunderhead, *Galyon*, no. 453; Gatlinburg, *Anderson & Jennison*, no. 873, *Anderson*, no. 802; Cades Cove Mountain, Blount County, *Anderson & Hesler*, nos. 1219, 1220; Monroe County, head of Tellico River, Apr. 23, 1890, *Scribner;* rich bluffs on Emory River, Harriman, *Kearney*, no. 170; mountain sides, Sewanee, *Kirby-Smith*.

13. T. CATESBAEI Elliott, Sketch Bot. S. C. & Ga. 429 (1817). *T. stylosum* Nuttall, Genera N. Am. Pl. i. 239 (1818). *T. nervosum* Ell., l. c. *Delostylis cernuum* Raf. (based on *T. stylosum* Nuttall) Jour. de Physique lxxxix. 102 (1819). Constitutes the sub-genus *Delostylium* Raf. Med. Fl. ii. 102 (1830).

This beautiful species stands apart from all other Trilliums not only in that it has a distinct style, but that the anthers are large and curved, the filaments long and stout, and all segments of the perianth strongly revolute.

A native of the mountains of North Carolina, Georgia and Tennessee, usually found in dry, sandy soil. In Tennessee it is more common at altitudes from 1200 to 2500 feet. The presence of a station at Memphis is a most unusual situation, though it points to a relation with the coastal plain which is by no means uncommon. *T. nervosum* Ell. is a slender form.

This plant was illustrated by Catesby, and was included in *T. cernuum* by Linnaeus.

Cades Cove, *Anderson*, no. 1152; Cades Cove Mountain, *Anderson*, nos. 907, 915; Sunshine, (Kinzel Springs), *Andes*, no. 68; on ridge among pines, Kinzel Springs, *Anderson* 1248; Ducktown, *Kearney*, no. 102; Albrecht Grove (?), "4 miles from here" (Memphis), *Egeling*.

14. T. CERNUUM L. Sp. Pl. 339 (1753). *T. latifolium* Raf., *T. hamosum* Raf., *T. medium* Raf., *T. glaucum* Raf., Med. Fl. ii. 101

[1] Victorin, Fr. Marie, Contr. Lab. Bot. Univ. Montreal xiv. 30 (1929).

(1830).—Similar to *T. Catesbaei* in that the flower is produced below the leaves on a curved pedicel, differing from it in having shorter, straight stamens, no style, and shorter petals which are not strongly recurved. The leaves are usually rhombic.

The typical form of this plant has lanceolate, acute petals. It grows from Newfoundland down the Atlantic coast to Georgia. Inland it is represented by *T. cernuum* var. *macranthum* Eames & Wiegand[1] which is a more robust plant with obovate petals rounded at the tips. This stout plant is very much like *T. Rugelii* Rendle.[2] The descriptions do not match as to color; the anthers and ovaries of *T. Rugelii* are described as deep purple. This character is more like that of *T. erectum* var. *album*, but Rendle's excellent plate is very much like some specimens of *T. cernuum* var. *macranthum* in the Gray Herbarium. The only specimen seen from a Tennessee station is of var. *macranthum*.

Ducktown, May, *Gattinger*.

15. T. Gleasoni Fernald, Rhodora xxxiv. 21 (1932). *T. declinatum* (Gray) Gleason Bull. Torr. Bot. Cl. xxxiii. 389 (1906), not Raf. *T. erectum*, var. *declinatum* Gray, Man., ed. 5, 523 (1867).—This plant has a straight, declined petiole, not a curved one, the flower below the leaves; filaments short, about 2 mm. long. In Tennessee, according to Eames & Wiegand.[3]

16. T. undulatum Willd. Ges. Naturf. Fr. Neue Schr. iii. 422 (1801). *T. erythrocarpum* Michx. Fl. Bor.-Am. i. 216 (1803).—The well-known Painted Trillium of coniferous forests of northeastern North America, which is near its southern limits in the mountains of Tennessee. It only grows at relatively high altitudes in the southern Appalachians, where it is associated with the Fraser's fir-red spruce forest.—Rich mountain woods, Lemon's Gap, *Kearney*, no. 337; Wolf Creek, May 20, 1928, *Jennison;* Shady Valley, May 4, 1928, *Jennison;* Mt. LeConte, *Galyon*, no. 468; Mt. LeConte, 5000 ft. elev., *Anderson*, no. 1250; Ocoe Valley, May, 1859, *Gattinger*.

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Lobelia Dortmanna in Aroostook County, Maine.—While on a botanical collecting trip in the northern part of Maine during the past summer I felt very fortunate in finding *Lobelia Dortmanna* Linné (Water Lobelia) growing in two localities. On August 20, 1933 I

[1] Eames & Wiegand, Rhodora xxv. 191 (1923).
[2] Rendle, Jour. of Bot. xxxix. 33 (1901).
[3] Rhodora xxv. 150 (1923).